

**IN THE CLAIMS:**

- 1 1. (CURRENTLY AMENDED) A distributed software architecture system configured to  
2 implement a routing protocol in a router of a computer network, the system comprising:  
3 a plurality of processors;  
4 a switch fabric interconnecting the processors; and  
5 a plurality of processes each running on a different one of the processors, the  
6 processes including two or more speakers and a protocol routing information base (RIB)  
7 that is used by each of the two or more speakers on the different ones of the processors,  
8 each speaker to operate independently to (i) handle one or more connections to peer  
9 routers of the router, (ii) receive and store routes from those peer routers, (iii) apply in-  
10 bound policy to the routes received from the peer routers and (iv) download all routes  
11 received from the peer routers, except those filtered by the inbound policy, to the protocol  
12 RIB, the protocol RIB to perform a first stage of route selection to compute a set of best  
13 routes from among the routes downloaded from all of the speakers of the router.
- 1 2. (ORIGINAL) The system of Claim 1 further comprising a local RIB (loc-RIB) main-  
2 tained by the protocol RIB and configured to store the set of best routes computed by the  
3 protocol RIB.
- 1 3. (ORIGINAL) The system of Claim 2 wherein the processes further include a global  
2 RIB configured to maintain a routing table for the router.
- 1 4. (ORIGINAL) The system of Claim 3 wherein the protocol RIB is configured to  
2 download the set of best routes from the loc-RIB to the global RIB, the global RIB fur-  
3 ther configured to use the downloaded set of best routes from the loc-RIB, along with

4 other sets of best routes downloaded from other routing protocols, to perform a second  
5 stage of route selection that computes optimal routes for installation in the routing table.

1 5. (ORIGINAL) The system of Claim 4 further comprising one or more line cards con-  
2 nected to the switch fabric, each line card configured to render forwarding decisions on  
3 packets received at the router using a forwarding information base (FIB) constructed  
4 from the optimal routes installed in the routing table.

1 6. (PREVIOUSLY PRESENTED) The system of Claim 2 wherein the protocol RIB is  
2 further configured to upload the set of best routes to the speakers to allow the speakers to  
3 advertise the best routes to the peer routers.

1 7. (ORIGINAL) The system of Claim 6 wherein each speaker is further configured to ap-  
2 ply outbound policy to the best routes prior to advertising them to the peer routers.

1 8. (ORIGINAL) The system of Claim 7 wherein each speaker is further configured to ad-  
2 vertise the best routes using update messages.

1 9. (ORIGINAL) The system of Claim 8 wherein the routing protocol is a Border Gateway  
2 Protocol (BGP) and wherein the protocol RIB is a BGP RIB (bRIB).

1 10. (ORIGINAL) The system of Claim 1 wherein the routing protocol is a distance vector  
2 routing protocol.

1 11. (CURRENTLY AMENDED) A method for implementing a routing protocol in a  
2 router of a computer network as a distributed software architecture system, the method  
3 comprising the steps of:

4 providing a plurality of processors of the router;

5 interconnecting the processors;

6 running at least two speakers on at least two first processors of the plurality of  
7 processors, each speaker:

8 handling one or more connections to peers of the router,

9 receiving and storing routes from those peers,

10 applying inbound policy to the routes received from the peers, and

11 running a protocol routing information base (RIB) on a second processor of the  
12 plurality of processors, the protocol RIB on the second processor used by each or the at  
13 least two speakers on the at least two first processors, each speaker downloading all  
14 routes received from the peers, except those filtered by the inbound policy, to the proto-  
15 col RIB, the protocol RIB performing a first stage of route selection to compute best  
16 routes from among the routes downloaded from all of the speakers of the router.

1 12. (ORIGINAL) The method of Claim 11 further comprising the steps of:

2 maintaining a local RIB (loc-RIB) at the protocol RIB; and

3 storing the best routes computed by the protocol RIB in the loc-RIB.

1 13. (ORIGINAL) The method of Claim 12 further comprising the step of running a  
2 global RIB on a third processor of the plurality of processors, the global RIB maintaining  
3 a routing table for the router.

1 14. (ORIGINAL) The method of Claim 13 wherein the second and third processors are  
2 the same processor.

1 15. (ORIGINAL) The method of Claim 13 further comprising the steps of:  
2       downloading the best routes from the loc-RIB to the global RIB;  
3       performing a second stage of route selection at the global RIB using the down-  
4 loaded best routes from the loc-RIB, along with other sets of best routes downloaded  
5 from other routing protocols, the second stage of route selection computing optimal  
6 routes for installation in the routing table.

1 16. (ORIGINAL) The method of Claim 15 further comprising the steps of:  
2       interconnecting one or more line cards to the plurality of processors;  
3       constructing a forwarding information base (FIB) at each line card, the FIB con-  
4 structed from the optimal routes installed in the routing table; and  
5       rendering forwarding decisions on packets received at each line card using the  
6 FIB.

1 17. (PREVIOUSLY PRESENTED) The method of Claim 12 further comprising the steps  
2 of:  
3       uploading the best routes from the protocol RIB to each speaker;  
4       applying outbound policy to the uploaded best routes; and  
5       advertising resulting best routes to the peers.

1 18. (CURRENTLY AMENDED) Apparatus adapted to implement a Border Gateway  
2 Protocol (BGP) routing protocol in a router of a computer network as a distributed soft-  
3 ware architecture system, the apparatus comprising:

4 a first processor of a plurality of interconnected processors to run ~~means for run-~~  
5 ~~ning a BGP speaker on a first processor of a plurality of interconnected processors, the~~  
6 BGP speaker including:

7 means for handling one or more connections to peers of the router,

8 means for receiving and storing routes from those peers,

9 means for applying inbound policy to the routes received from the peers,

10 and

11 a second processor of the plurality of interconnected processors to run ~~means for~~  
12 ~~running a BGP routing information base (bRIB) on a second processor of the plurality of~~  
13 ~~interconnected processors, the bRIB run on the second processor used by at least the BGP~~  
14 ~~speaker run on the first processor, the BGP speaker further including means for~~  
15 downloading all routes received from the peers, except those filtered by the inbound pol-  
16 icy, to the bRIB, the bRIB including means for performing a first stage of route selection  
17 to compute best routes from among the routes downloaded from the BGP speaker.

1 19. (ORIGINAL) The apparatus of Claim 18 further comprising:

2 means for maintaining a local RIB (loc-RIB) at the bRIB; and

3 means for storing the best routes computed by the bRIB in the loc-RIB.

1 20. (CURRENTLY AMENDED) A computer readable medium containing executable  
2 program instructions for implementing a routing protocol in a router of a computer net-  
3 work as a distributed software architecture system, the executable program instructions  
4 comprising program instructions for:

5 running at least two speakers on at least two first processors of a plurality of in-  
6 terconnected processors, each speaker:

7 handling one or more connections to peers of the router,

8 receiving and storing routes from those peers,

9 applying inbound policy to the routes received from the peers, and

10 running a protocol routing information base (RIB) on a second processor of the  
11 plurality of interconnected processors, the protocol RIB on the second processor used by  
12 each or the at least two speakers on the at least two first processors, each speaker  
13 downloading all routes received from the peers, except those filtered by the inbound pol-  
14 icy, to the protocol RIB, the protocol RIB performing a first stage of route selection to  
15 compute best routes from among the routes downloaded from all of the speakers of the  
16 router.

1 21. (ORIGINAL) The computer readable medium of Claim 20 further comprising pro-  
2 gram instructions for:

3 maintaining a local RIB (loc-RIB) at the protocol RIB; and

4 storing the best routes computed by the protocol RIB in the loc-RIB.

1 22. (CURRENTLY AMENDED) A method comprising;

2 running a first speaker on a first processor of a router, the first speaker i) handling  
3 a first set of one or more connections to one or more selected peer routers (ii) receiving  
4 and storing routes from those peer routers, (iii) applying inbound policy to the routes re-  
5 ceived from those peer routers and (iv) downloading routes received from those peer  
6 routers, except ones filtered by the inbound policy, to a protocol (routing information  
7 base) RIB;

8           running a second speaker on a second different processor of the router, the second  
9 speaker running independently of the first speaker, the second speaker i) handling a sec-  
10 ond set of one or more connections to one or more different selected peer routers (ii) re-  
11 ceiving and storing routes from those peer routers, (iii) applying inbound policy to the  
12 routes received from those peer routers and (iv) downloading routes received from those  
13 peer routers, except ones filtered by the inbound policy, to the protocol RIB;

14 |           running ~~a~~the protocol RIB on a third different processor of the router, the proto-  
15 col RIB performing a first stage of route selection to compute a set of best routes from  
16 among the routes downloaded from speakers; and

17           presenting, by the first speaker, second speaker and protocol RIB, an appearance  
18 | of a single routing protocol process to devices external from the router.:-

1   23. (PREVIOUSLY PRESENTED) The method of Claim 22 wherein the first speaker  
2 and the second speaker are Border Gateway Protocol (BGP) speakers and wherein the  
3 protocol RIB is a BGP RIB (bRIB).

1   24. (PREVIOUSLY PRESENTED) The method of Claim 22 further comprising:

2           maintaining a local RIB (loc-RIB) at the protocol RIB; and

3           storing the best routes computed by the protocol RIB in the loc-RIB.

1   25. (PREVIOUSLY PRESENTED) The method of Claim 22 further comprising:

2           running a global RIB on a fourth processor, the global RIB maintaining a routing  
3 table for the router.

1   26. (PREVIOUSLY PRESENTED) The method of Claim 22 further comprising:

2           downloading the best routes from a loc-RIB to a global RIB; and  
3           performing a second stage of route selection at the global RIB using the down-  
4 loaded best routes from the loc-RIB, along with other sets of best routes downloaded  
5 from other routing protocols, the second stage of route selection computing optimal  
6 routes for installation in the routing table.

1   27. (PREVIOUSLY PRESENTED) The method of Claim 22 further comprising:

2           interconnecting one or more line cards to the first processor and second processor;  
3           constructing a forwarding information base (FIB) at each line card; and  
4           rendering forwarding decisions on packets received at each line card using the  
5 FIB.

1   28. (NEW) An apparatus comprising:

2           a switch fabric;  
3           a first processor to run a first speaker, the first speaker operable to i) handle a first  
4 set of one or more connections to one or more selected peer routers (ii) receive and store  
5 routes from those peer routers, (iii) apply inbound policy to the routes received from  
6 those peer routers and (iv) download routes received from those peer routers, except ones  
7 filtered by the inbound policy, to a Border Gateway Protocol routing information base  
8 (bRIB);  
9           a second processor, different from the first processor, to run a second speaker, the  
10 second speaker to run independently of the first speaker, the second speaker operable to i)  
11 handle a second set of one or more connections to one or more different selected peer  
12 routers (ii) receive and store routes from those peer routers, (iii) apply inbound policy to  
13 the routes received from those peer routers and (iv) download routes received from those  
14 peer routers, except ones filtered by the inbound policy, to the bRIB; and

15           a third processor, different from the first and second processors, to run the bRIB  
16   used by both the first and second speakers, the bRIB to perform a first stage of route se-  
17   lection to compute a set of best routes from among the routes downloaded from the first  
18   and second speakers,

19           wherein the first speaker, the second speaker and the bRIB operate to provide an  
20   appearance of a single routing protocol process.

1   29. (NEW) The apparatus of claim 28 further comprising:

2           a fourth processor, different from the first, second and third processors, to run a  
3   global RIB that maintains a routing table for the apparatus.

1   30. (NEW) The apparatus of claim 28 further comprising:

2           at least one line card interconnected to the first processor and the second proces-  
3   sor, the at least one line card including a forwarding information base (FIB).